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24 September 1958

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DOC	17	REV DATE	6 MAY 1980	BY	018373
ORIG COMP	035	ORI	56	TYPE	01
ORIG CLASS	5	PAGES	8	REV CLASS	C
JUST	22	NEXT REV	2010	AUTH:	HR 13-2

Attention:

Contracting Officer

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Subject:

Contract RD-128, Work Order #4, Task Order #1

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Enclosure:

- (1) Three (3) copies [] Detailed Cost Breakdowns for completing remaining Recorders
- (2) Three (3) copies [] Detailed Cost Breakdowns for proposed modification of Video Recorders

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Gentlemen:

Confirming recent telephone conversations with your office, we are forwarding herewith our explanations and suggestions relative to the recorders under the subject work order.

We have broken down our proposal herein into two parts. One is based on the conditions as they exist relative to completion of work as it presently exists. The second part of our proposal is based on the increase in costs and fee to modify existing units in order to improve the performance of these recorders.

All funds under the subject work order have been completely expended and it is estimated that \$2,771.01, as detailed in enclosure (1), will be required for engineering hours and material required to complete the job and is in addition to the costs for modification of the rejected units, enclosure (2). 4791.93

The allotted contract funds were insufficient to complete this job for the following reasons:

1. When checkout of the units began in January 1958, it was found necessary to spend additional time in an attempt to meet performance requirements. Component selection was required and in some cases even this would not suffice.
2. The Agency was notified as early as February that a number of the units could not be made to work without certain circuit "fixes" being made and some additional recorder parts obtained. We were not allowed to make these "fixes" and consequently a large portion of the remaining funds were expended in further attempts to make the existing device work.

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3. Some of the funds were expended in evaluating the "fixes" required on the undelivered items and also evaluating the "fixes" required on the units returned from the Agency.

The cost estimate of enclosure (1) is based on completing the work on the subject work order as listed and qualified below:

1. The remaining six recorder units and associated amplifiers will be modified by adding any necessary circuit modifications to the amplifiers and adding a filter choke to the recorders. In addition, certain mechanical difficulties in three recorders will be investigated and repaired as explained below:

- a. Recorder Serial No. 372

The drive mechanism of this unit is binding. Although the specific trouble causing the binding has not been determined, approximately one and a half days has been allocated to the problem and it is felt that this represents a reasonable estimate of the time required to repair the mechanism. If the trouble cannot be found within this time the mechanism should probably be replaced (GFE). Additional time would then be required for this replacement.

- b. Recorder Serial No. 378

This unit does not record. Although the specific trouble causing the unit not to record has not been determined, it is believed that the trouble is mechanical (possibly a faulty switch); however, should the trouble be found to be in the recording head, the head should be replaced (GFE). Additional time would then be required for this replacement.

- c. Recorder Serial No. 380

This unit has a defective head which must be replaced in order that the unit can operate. A GFE head will be needed for this replacement. In addition there is binding of the drive mechanism. Although the specific trouble causing the binding has not been determined, one and a half days has been allocated to the problem and it is felt that this represents a reasonable estimate of the time required to repair the mechanism. If it is not possible to repair the unit in the allocated time, replacement of the drive mechanism (GFE) would be required. Additional time would then be required for this replacement.

2. Two of the five spare amplifiers are proposed to be modified by adding any necessary circuit modifications. Of the five spare amplifiers which are to be delivered, two of them are potted units (1 within specifications and 1 just below specifications) and therefore,

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cannot be modified. Three are not potted (1 within specifications and 2 require modifications as stated above).

3. Final data and test reports are proposed to be completed and submitted to the Agency.

We are submitting herewith as enclosure (2) our detailed cost breakdown in the estimated cost and fixed fee of \$4,741.93, which is our proposal for the modification and rework of the wire recorders, microphones, and earpieces returned to us as enumerated by serial number herein below:

The returned units were evaluated by [] Quality Control and Engineering Departments. It is [] opinion that within the meaning of the interpretation of the contract specifications with respect to "accurately recording" a certain video pulse and voice modulation, these units met contract specifications when shipped. It is felt that certain design "fixes" are required to improve the performance of recorders and amplifiers.

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The cost estimate of enclosure (2) is based on making necessary modifications to each recorder listed and qualified below.

Serial #352

We propose that this unit be modified by adding a filter choke to the motor circuit.

Serial #353

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

Serial #354

We propose that this unit be modified by adding circuit modifications to the amplifier, adding a filter choke to the motor circuit, and removing the mechanical noise from the mechanism. Although the specific trouble causing the mechanical noise has not been determined, it is believed that the time estimated is sufficient to repair the unit; however, should replacement parts be needed, these would have to be obtained as Government Furnished Equipment and additional time allocated for their installation.

Serial #355

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

Serial #357

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

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Serial #361

We propose that this unit be modified by adding circuit modifications to the amplifier, adding a filter choke to the motor circuit, and correcting the drive mechanism troubles.

Serial #362

We propose that this unit be modified by adding a filter choke to the motor circuit.

Serial #363

We propose that this unit be modified by adding circuit modifications to the amplifier, adding a filter choke to the motor circuit, and repairing the latch, connector, and motor switch. This unit was received by [] with a broken amplifier connector and a broken latch (on cover). The Agency indicated that this unit had an intermittent motor switch, motor noise (very noisy on recording wire), and that the amplifier was out. Because of the broken connector, it is not possible to evaluate these troubles. However, the cost estimate is based on making the modifications which would normally be needed in such cases.

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Serial #364

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

Serial #365

We propose that this unit be modified by adding a filter choke to the motor circuit.

Serial #367

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

Serial #369

We propose that this unit be modified by adding circuit modifications to the amplifier, adding a filter choke to the motor circuit, and adding polarity markings on the battery holder.

Serial #370

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit.

Serial #371

We propose that this unit be modified by adding a filter choke to the motor circuit.

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Serial #373

We propose that this unit be modified by adding circuit modifications to the amplifier, adding a filter choke to the motor circuit, and adding polarity markings on the battery holder.

Serial #374

We propose that this unit be modified by adding circuit modifications to the amplifier and adding a filter choke to the motor circuit. Although this unit is acceptable as is, better than marginal performance can be obtained by adding the amplifier modification.

Serial #376

We propose that this unit be modified by adding a filter choke to the motor circuit.

Serial #377

We propose that this unit be modified by adding a filter choke to the motor circuit and investigation and repair of recording problems. Although the specific trouble causing the unit not to record has not been determined, it is believed that the time bid is sufficient to repair the unit. However, should the trouble be found to be in the recording head, the head should be replaced (GFE) and additional time allocated for this replacement.

Serial #381

We propose that this unit be modified by adding a filter choke to the motor circuit.

Microphones and Earpieces

We propose that these items be repaired and adjusted as needed.

In addition to the above qualifications, the enclosed cost estimates are based on the following:

1. Since the modifications proposed above for the units are circuit "fixes" and do not represent a complete redesign of the unit, it is probable that the modifications of the amplifiers may not be identical. Because of this, no revision of the drawings or handbook is contemplated.
2. An effort has been made to establish a quantitative checkout procedure, but this has not been found feasible. Instead, final checkout will be performed by comparing the units to a unit that has been mutually accepted as a standard by [] and the Agency. Furthermore, in order to minimize the trouble arising from acceptance tests, it is requested that the Agency accept all units at []

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3. Due to the restricted space it will be necessary to mount some components on the printed circuit side of the amplifier board. These components will be secured to the board by the use of an adhesive.

It should be pointed out that the contract specifications are not definitive and require considerable judgment in application. Most of the recorders rejected by the Agency were concerned with problems which were qualitative rather than quantitative, i.e., matters of judgment. These problems had been discussed with representatives of the Agency and modifications to the recorders which would minimize them were suggested by [] although the Agency would not give [] the authority to incorporate them.

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A demonstration of possible circuit modifications to the units was given to the Agency during a meeting held at [] 4 June, between Agency Representatives and [] personnel. [] was requested to submit a cost proposal incorporating these changes.

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Experience has shown that the reliability of the amplifiers is very poor and that it is very difficult to obtain repeatability in test results. Inasmuch as the proposed modifications are circuit "fixes" rather than a complete redesign, [] can not guarantee long term reliability. However, it is felt that these "fixes" are the best practical solutions. In addition, the design "fix" may result in only a compromise correction of the various faults and that proper over-all operation can be reliably achieved only by complete redesign.

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In view of the circumstances surrounding this work order, and more specifically the specifications, our proposal contained herein is based on exerting our best efforts to meet all requirements and suggestions of your office, and therefore we would deem it feasible that adherence to all details of the specifications should not be held mandatory.

In view of the developmental nature of this work order and also based on the contractual provisions of the subject contract, relative to cost liability, and in view of [] continuous efforts to satisfy all your requirements, we do not believe it feasible for [] to continue this work at its own expense.

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We appreciate the difficulties that have arisen in this program and will be pleased to cooperate with you in order that this equipment can be completed and modified to meet its operational requirements.

If we may be of any further assistance or if any other data is required, please advise the undersigned at an early date. Also, your suggestions and your decision in this matter would be appreciated at your earliest convenience.

Very truly yours,

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Contract Administrator

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TITLE Wire Recorders - Costs to
Complete Remaining Items
Task Order 1 Work Order 4

COST ANALYSIS

CA-18, Rev. 7-57

ITEM No. _____

ENCLOSURE 1

BID NO. _____

DIRECT LABOR

PROJECT GROUP	\$	1,224.18
DRAFTING		
ENGINEERING SHOPS		
TECHNICAL WRITING		
MANUFACTURING		
QUALITY CONTROL		189.67
TOTAL DIRECT LABOR	\$	1,413.85
ANTICIPATED LABOR INCREASES	\$	
TOTAL DIRECT LABOR		1,413.85
OVERHEAD @ 95 %	\$	1,343.16
TOTAL O.H. & DIR. LABOR	\$	2,757.01

MATERIAL	\$	14.00
SUBSISTENCE		
TRAVEL		
PREMIUM PAY		
OTHER COSTS		
TOTAL ESTIMATED COSTS	\$	2,771.01
PROFIT	%	\$
FEE	%	\$
TOTAL AMOUNT	\$	

DETAILED ANALYSIS

HOURS RATE COST

PROJECT GROUP

ENG. SUPERVISION
PROJECT ENGINEER
SENIOR ENGINEER
ENGINEER
PROJ. PLANNER
JUNIOR ENGINEER
TECHNICIAN
ED. & ENG. AIDE
DRAFTING
SUPER & DESIGNER
DRAFTS & DETAIL
DUPL. MACH. OP.
ENGINEERING SHOPS
SUPERVISORS
MACHINIST
SHEET METAL &
PAINT SPRAY OP.
TECH. & ASSTS.
TECHNICAL WRITING
SUPER & TECH WTR.
TECH WRIT. ASS'T.

HOURS	RATE	COST
11	6.36	69.96
92	5.59	514.28
182	3.35	609.70
16	1.89	30.24

MANUFACTURING

SHOP SUPERVISORS
METHODS ENGINEERS
SHEET METAL
MACHINISTS
SUB-ASSEMBLERS
FINAL ASSEMBLERS
INSTR. ASSEMBLERS
MFG. ASSISTANTS
PLANNERS
PLANNING ASSISTS.
ENGINEERS
DESIGN DRAFTSMEN
ENG. ASSISTANTS
DRAFT. & DUPL. MACH.OP.

QUALITY CONTROL

QC SUPERVISORS
TEST SUPERVISORS
ENGINEERS
INSP. SUPERVISORS
TEST ASSISTANTS
INCOMING TESTERS
INCOMING INSPECTORS
SHOP INSPECTORS
ASSEMBLY INSPECTORS

MATERIAL

PURCHASED PARTS
RAW MATERIAL
SUBCONTRACTS
OTHER

HOURS RATE COST

HOURS	RATE	COST
5.5	4.81	26.46
38	3.37	128.06
1.6	3.47	5.55
16	1.85	29.60
		14.00

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ENCLOSURE 2

DIRECT LABOR

MATERIAL		\$	35.00
SUBSISTENCE			
TRAVEL			
PREMIUM PAY			
OTHER COSTS			
TOTAL ESTIMATED COSTS		\$	4,390.68
PROFIT		% \$	
FEE	8	% \$	351.25
TOTAL AMOUNT		\$	4,741.93

HOURS	RATE	COST
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SHOP SUPERVISORS
METHODS ENGINEERS
SHEET METAL
MACHINISTS
SUB-ASSEMBLERS
FINAL ASSEMBLERS
INSTR. ASSEMBLERS
MFG. ASSISTANTS
PLANNERS
PLANNING ASSISTS.
ENGINEERS
DESIGN DRAFTSMEN
ENG. ASSISTANTS
DRAFT. & DUPL. MACH.OP.

QC SUPERVISORS
TEST SUPERVISORS
ENGINEERS
INSP. SUPERVISORS
TEST ASSISTANTS
INCOMING TESTERS
INCOMING INSPECTORS
SHOP INSPECTORS
ASSEMBLY INSPECTORS

PURCHASED PARTS
RAW MATERIAL
SUBCONTRACTS
OTHER

HOURS	RATE	COST
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